

CLAIMS:

1. A method of tracking an instrument (5) that is inserted into the body of a patient (4), comprising the steps of:

a) detection of a movement signal which represents the movement phases of a periodic internal movement of the body;

5 b) generation of 2D images (I) of a body volume of interest, and storage thereof in an image database together with the associated imaging parameters and the associated movement phase;

c) measurement of the spatial position of the instrument (5) and optionally of the spatial position of at least one reference probe (2, 3);

10 d) selection of at least one 2D image from the image database, which 2D image corresponds in terms of its associated movement phase to the movement phase belonging to the measured spatial position of the instrument (5);

e) determination of the position of the instrument on the selected 2D image.

15 2. A method as claimed in claim 1, characterized in that an electrocardiogram and/or a breathing movement signal that is dependent on the breathing movement of the patient (4) is detected as movement signal.

20 3. A method as claimed in claim 1, characterized in that the position of the instrument (5) is represented superposed on the selected 2D images.

4. A method as claimed in claim 1, characterized in that, in step d), only 2D images from a single movement phase are available for selection from the image database.

25 5. A method as claimed in claim 1, characterized in that steps b) and c) to e) are carried out a number of times and in varying order.

6. A method as claimed in claim 1, characterized in that the image database contains 2D images from various projection directions.

7. A method as claimed in claim 1, characterized in that the 2D images are generated in step b) by means of X-radiation and/or ultrasound.
- 5 8. A method as claimed in claim 1, characterized in that at least one reference probe (2) is fitted on a movable X-ray device (1) which is provided for generating the 2D images (I).
9. A method as claimed in claim 1, characterized in that at least one reference
10 probe (3) is arranged on or in the body of the patient.
10. A method as claimed in claim 1, characterized in that the breathing movement is compensated for using movement models of the body.
- 15 11. An arrangement for tracking an instrument (5) that is inserted into the body of a patient (4), comprising:
- a) a device (1) for generating 2D images (I) of a body volume of interest;
 - b) a unit (6) for determining the set imaging parameters of the device (1);
 - c) a signal measurement unit (8) for detecting a movement signal which
20 represents the movement phases of a periodic internal movement of the body;
 - d) a storage unit (7) for storing an image database of 2D images of the body volume together with the associated imaging parameters and the associated movement phases;
 - e) a position measurement unit (6) for determining the spatial position of the
25 instrument (5) that is inserted into the body and optionally the spatial position of at least one reference probe (2, 3);
 - d) a control and computation unit (7) for selecting at least one 2D image from the image database, which 2D image corresponds in terms of its associated movement phase to the movement phase belonging to the spatial position of the instrument, and for
30 determining the position of the instrument (5) on the selected 2D image.
12. An arrangement as claimed in claim 11, characterized in that it is designed for carrying out a method as claimed in at least one of claims 1 to 10.